

FORM PTO-1390
(REV 10-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

P56687

U.S. APPLICATION NO. (if known, see 37CFR 1.5)

10/070137

INTERNATIONAL APPLICATION NO.
PCT/CH00/00464

INTERNATIONAL FILING DATE
31 August 2000

PRIORITY DATE CLAIMED
2 September 1999

TITLE OF INVENTION

MECHANICALLY REGULATED TIMEPIECE

APPLICANT(S) FOR DO/EO/US

Watch-U-License AG / Elmar MOCK, Begona GUERRY, Elio MARIOTTO

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This an express request to promptly begin national examination procedures 935 U.S.C. 371.
4. ☒ The U.S. has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☒ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☒ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(3)). (**NOT executed**)
10. ☒ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36. (35 U.S.C. 371(c)(5))

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98. PTO-1449
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

Copies of: - PCT/IPEA/409
- PCT/IS/210
- WO01/18611/A1

U.S. APPLICATION NO. (if known, see 37CFR 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
10/070137	PCT/CH00/00464	P56687

17. [REDACTED] The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492(a) (a)-(5)):

Neither international preliminary examination fee (37CFR 1.782) nor international search fee (37CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO	\$1040.00
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....	\$890.00
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTQ.....	\$740.00
International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4).....	\$710.00
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Articles 33(1)-(4).....	\$100.00

CALCULATIONS PTO USE ONLY

ENTER APPROPRIATE BASIC FEE AMOUNT = \$ 890.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☒ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).

\$ 890.00

\$ 130.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
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Total claims	23	-20=	3	X \$18.00
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\$ 54.00

Independent claims	2	-3=		X \$84.00
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§ 2

MULTIPLE DEPENDENT CLAIMS(S) (if applicable)	X \$280.00
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§ 0

TOTAL OF ABOVE CALCULATIONS = \$ 1,074.00

☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.

\$ 2.00

SUBTOTAL	=	\$ 1,074.00
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Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)) ☐ +

2

TOTAL NATIONAL FEE	=	\$ 1,074.00
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Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **\$40.00** per property +

29

TOTAL FEE ENCLOSED	=	\$ 1,074.00
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Amount to

Amount to be refunded	\$
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charged	\$
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- a. ☒ A check in the amount of \$ 1,074.00 to cover the above fees is enclosed (**Check #42136**)
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **02-4943**. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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7B Bushnell
SIGNATURE

Robert E. Bushnell

NAME _____

27.774

REGISTRATION NUMBER

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

ELMAR MOCK *et al.*U.S. Serial No.: *to be assigned*

Priority date: 2 September 1999

International Application No.: PCT/CH00/00464

U.S. Filing Date: 4 March 2002

I.A. Filing date: 31 August 2000

For: MECHANICALLY REGULATED TIMEPIECE

PRELIMINARY AMENDMENTAssistant Commissioner
for Patents
Washington, D.C. 20231
Box: PCT

Sir:

Entry of the following amendments prior to calculation of the filing fee and prior to examination of the above-captioned new application is respectfully requested.

Folio: P56687
Date: 3/4/02
I.D.: REB/JGS/kf

CLEAN VERSION OF AMENDMENTS

IN THE SPECIFICATION

1. Please insert the following immediately before the first paragraph on page 1:

BACKGROUND OF THE INVENTION

Technical Field

2. Please amend the first paragraph on page 1, from line 3 through 4, to read as follows:

The present invention relates to a mechanically regulated time indicator particularly suited for use in wrist-watches.

3. Please insert the following immediately before the second paragraph on page 1:

Related Art

4. Please insert the following immediately before the first paragraph on page 3:

SUMMARY OF THE INVENTION

5. Please insert the following immediately before the first paragraph on page 4:

BRIEF DESCRIPTION OF THE DRAWINGS

6. Please insert the following immediately before the second paragraph (which starts with "Fig. 1 is a cross-sectional view of a balance spring tourbillon...") on page 4:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

7. Please amend the paragraphs bridging pages 4 and 7, from the second line from the bottom line on page 4 thru line 13 on page 7, to read as follows:

This exemplary embodiment of a balance spring type time indicator refers to a flying tourbillon. It comprises a conventional oscillator with balance, balance-spring and escapement. It functions, for illustrative purposes, with a Swiss pallet escapement. This exemplary embodiment is by no means limiting. A person having ordinary skill in the art, on learning the present invention, can create a flying tourbillon with another escapement system (for example, a check or detent escapement system) or with another known regulating system.

This oscillator is mounted in the interior of a tourbillon cage. The tourbillon cage turns about a bearing. The tourbillon is visible from the side of dial 15. In particular, on the side of dial 15, the tourbillon cage is formed by a balance bridge 2 attached to a tourbillon collet 1 by the pillars 3.

Thus, the flying tourbillon is entirely visible and has no parts that overlap the cage.

The single bearing is a cantilever ball bearing construction. On the bottom side, the cannon 4 is held axially in the ball bearing 5 that enables it to turn freely. This ball bearing 5 is attached by an external ring to a tourbillon bridge 6.

The tourbillon collet 1 is the part with the greatest diameter and thus defines the space required in the plane of the watch. This tourbillon collet 1 accepts the tothing that engages with a last wheel 12 of a movement 13. The oscillator is maintained by a shaft 7 having a first extremity 9 driven into cannon 4 attached to the collet 1 and a second extremity 8 driven into the balance bridge 2. These extremities 8 and 9 can include anti-shock units. The movement of the Swiss pallet type oscillator is maintained by a pallet and a pallet wheel borne by the tourbillon collet 1. The pallet and pallet wheel, borne by the tourbillon collet 1, turn with the tourbillon collet 1 about the axis of the latter. The pallet wheel is disposed with a pinion 10, which engages with an internal toothed crown 11 attached to the tourbillon bridge 6, thereby creating the rotation of the pallet wheel 10 about its own axis by the motion of the tourbillon collet 1.

According to the exemplary embodiment, the balance is centered with respect to the single bearing. This exemplary embodiment is by no means limiting. A person skilled in the art and knowing the present invention can create a flying tourbillon with a balance eccentrically arranged inside the tourbillon cage.

The assembled tourbillon collet 1, balance bridge 2, cannon 4, ball bearing type bearing 5 and tourbillon bridge 6 form an integral module that supports the regulatory organs, that is, the balance spring oscillator with pallets, pallet wheel, pinion 10 and internal toothed crown 11. The entire arrangement is a tourbillon module that is completely detachable from the movement 13.

The tourbillon module has the advantage that it can be assembled by itself and adjusted outside the movement. This tourbillon module is independent of the movement 13 insofar as the frequency, decoration or adjustment are concerned. A movement 13 can be fitted with tourbillon modules of different frequencies and/or different aesthetic creation. This results in the assembly and maintenance of such a tourbillon module being particularly easy, fast, economical and flexible. In particular, this tourbillon module can be mounted into the watch at the last moment. Thus, it is possible to have a relatively small stock of tourbillon modules and be able to satisfy customers' wishes in a flexible manner, enabling customization of the watch.

Advantageously, the flying tourbillon according to the invention is arranged in the plane of the dial 15 of a watch or wristwatch in such a way that it is visible from the dial side in the six o'clock or twelve o'clock position. Due to its small thickness, this flying tourbillon can be arranged in the movement 13 in a raised manner with respect to the dial, making the tourbillon and its parts particularly well visible. An indicator hand (for example, an indicator 14 for a small second hand) can be fixed to the balance bridge 2.

In addition and in place and instead of a second hand, the balance bridge 2 can itself serve as an indicator by means of its shape and/or by an associated decoration. For this purpose, the balance bridge is, for example, created transparent or semi transparent. It can be disposed with precious stones and/or precious metals and/or ornamentations as indicators. A person skilled in the art and knowing the present invention can create other examples of such indicators.

This tourbillon is visible from the side of dial 15. The total height of the tourbillon module can vary so as to bring the surface of the tourbillon higher than that of the dial 15 but still below the sweep of the hour hand 16 and minute hand 17.

The compatibility between a family of movements and a family of tourbillon modules is assured by means of an interface, thereby ensuring an interchangeability of the tourbillon modules. The interfacial element ensures that the tourbillon collet 1 maintains a characteristic speed of rotation, for example, 60 sec. per revolution. This is provided by an interfacial element, for example, by the geometry of its toothing, by the number of teeth, and/or by the shape and positions of the teeth in the movement 13, so as to interlock perfectly with the last wheel 12 of the movement 13. The demultiplication ratio can be adjusted such that interchangeability can be ensured. If, for example, the oscillator frequency is reduced by a factor, then the original ratio of the diameter of the pinion 10 to that of the internal toothed crown 11 must increase by the same factor.

8. Please amend the paragraphs bridging pages 7 and 8, from the fourth line from the bottom line on page 7 thru the bottom line on page 8, to read as follows:

Fig. 5 is a view from the bottom or back (side opposite to the dial side) of a movement 13 with a tourbillon module 20 as illustrated in Fig. 4 and which is mounted on the movement 13. The tourbillon bridge 6 is fixed onto the bottom side of movement 13 by screws 24. Thus, to separate the tourbillon module 20 from the movement 13, one only needs to unscrew the screws 24 and remove the module 20 from the movement 13.

The tourbillon collet 1 receives the tothing engaging with a last wheel 12 arranged in a recess of the movement 13.

Fig. 6 is a cross-sectional view of the detail along the line D-D of Fig. 5 and resembles Fig. 2 but shows more clearly the modularity of the tourbillon and its extension into the movement 13. The tourbillon bridge 6 is fixed on the bottom side or back of the movement 13 and the tourbillon module 20 extends into an opening 18 of the movement 13 up to the side of dial 15 of the latter.

The ball bearing type bearing 5 is not arranged on the same level as the first extremity 9 of the shaft 7 (as illustrated in Fig. 2) but is distanced from this first extremity 9 of shaft 7 toward the level of the center of gravity of the rotating module 20. This position of the bearing 5, as close as possible to the center of gravity, renders the arrangement more resistant to shocks.

Fig. 6 clearly shows that, in order to detach the tourbillon module 20 from the movement 13, no other component need be removed. Thus, the assembly and maintenance of such a tourbillon module 20 is particularly easy, rapid, economical and flexible. In particular, the tourbillon module 20 can be mounted in the watch at the last minute. That means that the movement 13 and the tourbillon module 20 can be manufactured and assembled completely independently. Thus, it is possible to have a relatively small stock of tourbillon modules and to be able to satisfy the customers' wishes in a flexible manner, enabling customization of the watch. If servicing work is required, the whole movement does not need to be disassembled to gain access to the tourbillon, nor does the case need to be separated from the movement. Although the tourbillon is visible from the side of dial 15, to remove it one only needs to open the watch from the back, unscrew the module, and withdraw the module from the movement.

Although the preferred embodiments of the present invention have been described, it will be understood by those skilled in the art that the present invention should not be limited to the described preferred embodiment. Rather, various changes and modifications can be made within the spirit and scope of the present invention, as defined by the following claims.

IN THE CLAIMS

Please cancel claims 1 thru 11 without prejudice or disclaimer, and add claims 12 thru 34,
as follows:

1 --12. A time indicator comprising a movement element and a flying tourbillon module, said
2 flying tourbillon being visible from a dial side of said movement element;

3 wherein said flying tourbillon module comprises an independent element relative to said time
4 indicator, and said flying tourbillon module is separable from said movement element via a rear side
5 of said time indicator.

--13. The time indicator of claim 12, said flying tourbillon module comprising:

a balance bridge;

a collet forming a cage with said balance bridge;

4 a balance disposed in said cage between said collet and said balance bridge; and

5 bearing means for supporting said balance bridge, said collet and said balance.

1 --14. The time indicator of claim 13, wherein said bearing means comprises a single ball
2 bearing.

1 --15. The time indicator of claim 13, said flying tourbillon module further comprising a shaft
2 on which said balance is mounted, said shaft having an end, said bearing means comprising a bearing

3 positioned a distance from said end of said shaft at a level of a center of gravity of said flying
4 tourbillon module.

1 --16. The time indicator of claim 13, wherein said collet has a diameter greater than a
2 diameter of any other element so as to define a space requirement in a plane of the time indicator.

3 --17. The time indicator of claim 13, wherein said balance is disposed off center within the
4 cage.

1 --18. The time indicator of claim 13, wherein said flying tourbillon module further comprises
2 a shaft on which said balance is mounted, a cannon surrounding said shaft, and a tourbillon bridge
3 on which said collet is disposed, and wherein said balance bridge, said collet, said balance, said
4 bearing means and said tourbillon bridge form an integral unit supporting regulatory elements of said
5 time indicator.

1 --19. The time indicator of claim 17, wherein said regulatory elements include an oscillator
2 shaft having an end, said bearing means comprising a bearing positioned between a plane of said end
3 of said oscillator shaft and a plane of a center of gravity of said flying tourbillon module.

1 --20. The time indicator of claim 13, wherein said balance bridge is formed of one of a
2 transparent material and a semi-transparent material so as to serve as a second hand of said time

3 indicator.

1 --21. The time indicator of claim 13, wherein said balance bridge carries at least one of
2 precious stones, precious metals and ornaments so as to serve as a second hand of said time
3 indicator.

4 --22. The time indicator of claim 12, wherein said flying tourbillon module is positioned in
5 a plane of a dial of the time indicator and is visible from the dial side of the time indicator in one of
6 a six o'clock position and a twelve o'clock position.

7 --23. The time indicator of claim 12, said time indicator including a dial, said flying
8 tourbillon module being positioned in said movement element in a raised manner relative to said
9 dial.

1 --24. A method of assembling a time indicator of a balance spring flying tourbillon type,
2 comprising the steps of:

- 3 (a) providing the time indicator with a movement element and regulatory elements;
4 (b) providing a flying tourbillon module which includes a plurality of elements forming an
5 integral module for supporting the regulatory elements; and
6 (c) mounting the flying tourbillon module in the time indicator as said integral module
7 separable from the movement element.

1 --25. The method of claim 24, wherein the plurality of elements of said flying tourbillon
2 module comprises at least one of a balance bridge, a collet, a balance, a cannon, a bearing, and a
3 tourbillon bridge.

1 --26. The method of claim 24, wherein step (b) comprises assembling said flying tourbillon
2 module as a separate component relative to said movement element and said regulatory elements of
3 said time indicator.

1 --27. The method of claim 24, wherein said flying tourbillon module is separable from said
2 time indicator and is thereby adjustable outside the movement element of said time indicator.

1 --28. The method of claim 24, wherein step (c) comprises inserting the flying tourbillon
2 module from a side of the movement element opposite to a dial side of the time indicator.

1 --29. The method of claim 28, wherein step (c) further comprises inserting the flying
2 tourbillon module into an opening in the movement element.

1 --30. The method of claim 29, wherein step (c) further comprises fixing the flying tourbillon
2 module to the movement element on the side of the movement element opposite to the dial side of
3 the time indicator.

1 --31. The method of claim 30, wherein the plurality of elements of said flying tourbillon
2 module includes a tourbillon bridge, and step (c) comprises fixing the tourbillon bridge of said flying
3 tourbillon module to the movement element on the side of the movement element opposite to the dial
4 side of the time indicator.

1 --32. The method of claim 24, wherein step (c) comprises inserting the flying tourbillon
module into an opening in the movement element.

2 --33. The method of claim 24, wherein step (c) comprises fixing the flying tourbillon module
to the movement element on a side of the movement element opposite to a dial side of the time
indicator.

3 --34. The method of claim 24, wherein the plurality of elements of said flying tourbillon
4 module includes a tourbillon bridge, and step (c) comprises fixing the tourbillon bridge of said flying
tourbillon module to the movement element on a side of the movement element opposite to a dial
side of the time indicator.

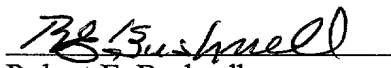
REMARKS

This Preliminary Amendment is being submitted in order to further prosecution of this application. It is requested that the Preliminary Amendment be implemented and that the application be amended accordingly prior to computing the filing fee of this application.

Specifically, the specification is being amended to add section headings in accordance with the Manual of Patent Examining Procedure (MPEP), and to improve the grammatical form of, and correct minor errors in, the specification. Claims 1 thru 11 are being canceled without prejudice or disclaimer, and are being replaced by new claims 12 thru 34 in order to eliminate multiple dependent claims and improve the form of the claims.

In view of the foregoing Preliminary Amendment, this Application is believed to be in condition for examination. Should questions arise during the examination, the Examiner is requested to contact applicant's attorney.

Respectfully submitted,


Robert E. Bushnell,
Attorney for the Applicant
Registration No. 27,774

1522 "K" Street, N.W., Suite 300
Washington, D.C. 20005
(202) 408-9040

Folio: P56687
Date: 3/4/02
I.D.: REB/JGS

MARKED-UP VERSION OF AMENDMENTS

IN THE SPECIFICATION

1. Please insert the following immediately before the first paragraph on page 1
(underline is an indication of insertion under 37 C.F.R. §1.121):

BACKGROUND OF THE INVENTION

Technical Field

2. Please amend the first paragraph on page 1, from line 3 through 4, as follows:

The present invention relates to a mechanically regulated time indicator [according to the definition of the Claims. This time indicator is] particularly suited for use in wrist-watches.

3. Please insert the following immediately before the second paragraph on page 1
(underline is an indication of insertion under 37 C.F.R. §1.121):

Related Art

4. Please insert the following immediately before the first paragraph on page 3
(underline is an indication of insertion under 37 C.F.R. §1.121):

SUMMARY OF THE INVENTION

5. Please insert the following immediately before the first paragraph on page 4 (underline is an indication of insertion under 37 C.F.R. §1.121):

BRIEF DESCRIPTION OF THE DRAWINGS

6. Please insert the following immediately before the second paragraph (which starts with "Fig. 1 is a cross-sectional view of a balance spring tourbillon ...") on page 4 (underline is an indication of insertion under 37 C.F.R. §1.121):

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

7. Please amend the paragraphs bridging pages 4 and 7, from the second line from the bottom line on page 4 thru line 13 on page 7, as follows:

This exemplary embodiment of a balance spring type time indicator refers to a flying tourbillon. It comprises a conventional oscillator with balance, balance-spring and escapement. It functions, for illustrative purposes, with a Swiss pallet escapement. This exemplary embodiment is by no means limiting. A person having ordinary skill in the art, on learning the present invention, can create a flying tourbillon with another escapement system[,] (for example, a check or detent escapement

system) or with another known regulating system.

This oscillator is mounted in the interior of a tourbillon cage. The tourbillon cage turns about a bearing. The tourbillon is visible from the [dial] side of dial 15. In particular, on the [dial] side of dial 15, the tourbillon cage is formed by a balance bridge 2 attached to a tourbillon collet 1 by the pillars 3. Thus, the flying tourbillon is entirely visible and has no parts that overlap the cage.

The single bearing is a cantilever ball bearing construction. On the bottom side, the cannon 4 is held axially in the ball bearing 5 that enables it to turn freely. This ball bearing 5 is attached by an external ring to a tourbillon bridge 6.

The tourbillon collet 1 is the part with the greatest diameter and thus defines the space required in the plane of the watch. This tourbillon collet 1 accepts the tothing that engages with a last wheel 12 of a movement 13. The oscillator is maintained by a shaft 7 having a first extremity 9 driven into [a] cannon 4 attached to the collet 1 and a second extremity 8 driven into the balance bridge 2. These extremities 8 and 9 can include anti-shock units. The movement of the Swiss pallet type oscillator is maintained by a pallet and a pallet wheel borne by the tourbillon collet 1. The pallet and pallet wheel, borne by the tourbillon collet 1, turn with the tourbillon collet 1 about the axis of the latter. The pallet wheel is disposed with a pinion 10, which engages with an internal toothed crown 11 attached to the tourbillon bridge 6, thereby creating the rotation of the pallet wheel 10 about its own axis by the motion of the tourbillon collet 1.

According to the exemplary embodiment, the balance is [centred] centered with respect to the single bearing. This exemplary embodiment is by no means limiting. A person skilled in the art and knowing the present invention can create a flying tourbillon with a balance eccentrically arranged inside the tourbillon cage.

The [assembly] assembled tourbillon collet 1, [the] balance bridge 2, cannon 4, ball bearing type bearing 5 and [the] tourbillon bridge 6 form an integral module that supports the regulatory organs, that is, the balance spring oscillator with pallets, pallet wheel, [and] pinion 10 and internal toothed crown 11. The [whole] entire arrangement is a tourbillon module that is completely detachable from the movement 13.

The tourbillon module has the advantage that it can be assembled by itself and adjusted outside the movement. This tourbillon module is independent [from] of the movement 13 [in so far] insofar as the frequency, decoration or adjustment are concerned. A movement 13 can be fitted with tourbillon modules of different frequencies and/or different aesthetic creation. This results in the assembly and maintenance of such a tourbillon module being particularly easy, fast, economical and flexible. In particular, this tourbillon module can be mounted into the watch at the last moment. Thus, it is possible to have a relatively small stock of tourbillon modules and be able to satisfy customers' wishes in a flexible manner, enabling [customisation] customization of the watch.

Advantageously, the flying tourbillon according to the invention is arranged in the plane of the dial

15 of a watch or wristwatch in such a way that it is visible from the dial side in the six o'clock or twelve o'clock position. Due to its small thickness, this flying tourbillon can be arranged in the movement 13 in a raised manner with respect to the dial, making the tourbillon and its parts particularly well visible. An indicator hand [can be fixed to the balance bridge 2] (for example, an [a] indicator 14 for a small second hand) can be fixed to the balance bridge 2.

In addition and in place and instead of a second hand, the balance bridge 2 can itself serve as an indicator by means of its shape and/or by an associated decoration. For this purpose, the balance bridge is, for example, created transparent or semi transparent. It can be disposed with precious stones and/or precious metals and/or ornamentations as indicators. A person skilled in the art and knowing the present invention can create other examples of such indicators.

This tourbillon is visible from the [dial] side of dial 15. The total height of the tourbillon module can vary so as to bring the surface of the tourbillon higher than that of the dial 15 but still below the sweep of the [minute and] hour [hands 16, 17] hand 16 and minute hand 17.

The compatibility between a family of movements and a family of tourbillon modules is assured by means of an interface, thereby ensuring an interchangeability of the tourbillon modules. The interfacial element ensures that the tourbillon collet 1 maintains a characteristic speed of rotation, for example, 60 sec. per revolution. This is provided by an interfacial element, for example, by the geometry of its tothing, by the number of teeth, and/or by the shape and positions of the teeth in the

movement 13, so as to interlock perfectly with the last wheel 12 of the movement 13. The demultiplication ratio can be adjusted such that interchangeability can be ensured. If, for example, the oscillator frequency is reduced by a factor, then the original ratio of the diameter of the pinion 10 [and] to that of the internal toothed crown 11 must increase by the same factor.

8. Please amend the paragraphs bridging pages 7 and 8, from the fourth line from the bottom line on page 7 thru the bottom line on page 8, as follows:

Fig. 5 is a view from the bottom or back (side opposite to the dial side) of a movement 13 with a tourbillon module 20 as illustrated in Fig. 4 and which is mounted on the movement 13. The [tourbillon module or rather the] tourbillon bridge 6 is fixed onto the bottom side of movement 13 by screws 24. Thus, to separate the tourbillon module 20 from the movement 13, one only needs to unscrew the screws 24 and remove the module 20 from the movement 13.

The tourbillon collet 1 receives the toothing engaging with a last wheel [(not shown)] 12 arranged in a recess [12] of the movement 13.

Fig. 6 is a cross-sectional view of the detail along the line D-D of Fig. 5 and resembles Fig. 2 but shows more clearly the modularity of the tourbillon and its extension into the movement 13. The tourbillon bridge 6 is fixed on the bottom side or back of the movement 13 and the tourbillon module

20 extends into an opening 18 of the movement 13 up to the [dial] side of dial 15 of the latter.

The ball bearing type bearing 5 is not arranged on the same level as the first extremity 9 of the [staff] shaft 7 (as illustrated in Fig. 2) but is distanced from this first extremity 9 of [this staff] shaft 7 [towards] toward the level of the [centre] center of gravity of the rotating module 20. This position of the bearing 5, as close as possible to the [centre] center of gravity, renders the arrangement more resistant to shocks.

Fig. 6 clearly shows that, in order to detach the tourbillon module 20 from the movement 13, no other component need be removed. Thus, the assembly and maintenance of such a tourbillon module 20 is particularly easy, rapid, economical and flexible. In particular, [this] the tourbillon module 20 can be mounted in the watch at the last minute. That means that the movement 13 and the tourbillon module 20 can be manufactured and assembled completely independently. Thus, it is possible to have a relatively small stock of tourbillon modules and to be able to satisfy the customers' wishes in a flexible manner, enabling [customisation] customization of the watch. If servicing work is required, the whole movement does not need to be disassembled to gain access to the tourbillon, nor does the case need to be separated from the movement. Although the tourbillon is visible from the [dial] side of dial 15, to remove it one only needs to open the watch from the back, unscrew the module, and withdraw the module from the movement.

Although the preferred embodiments of the present invention have been described, it will be

understood by those skilled in the art that the present invention should not be limited to the described preferred embodiment. Rather, various changes and modifications can be made within the spirit and scope of the present invention, as defined by the following claims.

IN THE CLAIMS

Please cancel claims 1 thru 11 without prejudice or disclaimer, and add claims 12 thru 34, as listed above.